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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,351	08/20/2003	Jonathan A. Nagel	9005/6	8595
27774	7590	01/13/2005	EXAMINER	
MAYER, FORTKORT & WILLIAMS, PC			HUGHES, DEANDRA M	
251 NORTH AVENUE WEST			ART UNIT	PAPER NUMBER
2ND FLOOR				3663
WESTFIELD, NJ 07090			DATE MAILED: 01/13/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/646,351	NAGEL ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Deandra M Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 29 October 2004.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1 and 3-16 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1 and 3-8 is/are allowed.  
 6) Claim(s) 9 is/are rejected.  
 7) Claim(s) 10 and 11 is/are objected to.  
 8) Claim(s) 12-16 are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 22 March 2002 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 9 and 12-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimojoh (US 6,606,188 filed Sep. 27, 2001).

With regard to claim 9, Shimojoh disclose:

- at least four optical amplifiers (fig. 2: 5<sub>1U</sub>, 5<sub>2U</sub>, 5<sub>1D</sub>, 5<sub>2D</sub>) each supplying optical amplification to an optical signal traveling in a different unidirectional (U=upstream; D=downstream) optical fiber that collectively form at least two bi-directional pairs of optical fibers (S<sub>1U</sub> and S<sub>2U</sub> are one pair; S<sub>1D</sub> and S<sub>2D</sub> are a second pair)
- a first plurality of pump sources (1<sub>1</sub>, 1<sub>4</sub>) for providing pump energy to a first optical fiber (S<sub>1U</sub>) located in a first of the optical fiber pairs and a second optical fiber (S<sub>2U</sub>) located in a second of the optical fiber pairs, said first optical fiber and said second optical fiber supporting optical signals traveling in a common direction (UPSTREAM);
- a first combiner (2<sub>3</sub>) arrangement combining the pump energy from the first plurality of pump sources and distributing substantially all of the combined pump energy to the optical amplifiers supplying amplification to optical signals traveling in the first and the second optical fibers

- a second plurality of pump sources (1<sub>2</sub>, 1<sub>3</sub>) for providing pump energy to a third optical fiber (S<sub>1D</sub>) located in said first optical fiber pair and a fourth optical fiber located in said second optical fiber pair, said third optical fiber and said fourth optical fiber (S<sub>2D</sub>) supporting optical signals traveling in a common direction that is opposite to that of said first and second optical fibers (DOWNSTREAM); and
- a second combiner (2<sub>4</sub>) arrangement combining the pump energy from the second plurality of pump sources and distributing substantially all of the combined pump energy to the optical amplifiers supplying amplification to optical signals traveling in the third and the fourth optical fibers.

With regard to claims 12-13, fig. 2, 6<sub>1U</sub> and 6<sub>DU</sub> discloses EDFA.

With regard to claims 14-16, the couplers (2<sub>1-24</sub>) are 2x2.

***Allowable Subject Matter***

3. Claims 1 and 3-8 are allowed.
4. Claims 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter. The prior art does not teach or make obvious a *first passive coupling arrangement for conveying excess pump energy that traverses the optical amplifiers in the first and second optical fibers to the third and the fourth optical fibers at a location*

*upstream from the optical amplifiers supplying amplification to optical signals traversing the third and the fourth optical fibers* in conjunction with the other features of the claim.

### ***Response to Arguments***

6. With regard to claims 9 and 12-16, Applicant's arguments filed 10/29/04 have been fully considered but they are not persuasive. Applicant argues that the prior art (Shimojoh) does not disclose that the first and second combiners distribute substantially all of the pump energy it receives from the pump sources;

"In contrast to the present invention as set forth in claim 9, Shimojoh shows in FIG. 2 combiner arrangements in which only a fraction of the pump energy they each receive from the pump sources is provided to fiber pairs that support signals traveling in a common direction. For example, only a portion of the pump energy from sources 1<sub>1</sub> and 1<sub>2</sub> is provided to fibers S<sub>1U</sub> and S<sub>2U</sub> by couplers 2<sub>1</sub> and 2<sub>3</sub>. The remaining fraction of the pump energy from sources 1<sub>1</sub> and 1<sub>2</sub> are provided to fibers S<sub>1D</sub> and S<sub>2D</sub> by couplers 2<sub>1</sub> and 2<sub>4</sub>. Accordingly, Shimojoh does not show or suggest a first (second) combiner that distributes substantially all of the pump energy it receives from the first (second) plurality of pump sources to the optical amplifiers in the first (third) and second (fourth) optical fibers." (pg. 7, 3<sup>rd</sup> paragraph of Remarks).

This argument is found not convincing because the applicant identifies the coupled the pump sources in such a way that only a fraction of the power is delivered to the respective optical fibers. However, the Examiner specifically identified pump sources (1<sub>1</sub>, 1<sub>4</sub>) as the first plurality and pump sources (1<sub>2</sub>, 1<sub>3</sub>) as the second plurality in the rejection of instant claim 9. With the pump sources identified as such, it is clear that couplers 2<sub>3</sub> and 2<sub>4</sub>, deliver substantially all of the pump power from sources (1<sub>1</sub>, 1<sub>4</sub>) and (1<sub>2</sub>, 1<sub>3</sub>), respectively, to the upstream and downstream fibers.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 703-306-4175. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Deandra M Hughes  
Examiner  
Art Unit 3663

  
THOMAS H. TARCZA  
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